model answer

	$\sin x$	$\sin 2x$	$\sin^2 x$	$\cos x$	$\cos 2x$	$\cos^2 x$
						0.75
30°	0.5	.866	0.25	.866	0.5	
150°	0.5	.866	0.25	-.866	0.5	0.75

conjecture: $\sin 2x = \cos x$

240°	-.866	.866	0.75	-0.5	-0.5	0.25

hmm... doesn't work...

... but these look similar, could it be and w/ 0.2 I can multiply by 2

modified conjecture: $\sin 2x = 2 \sin x \cos x$

330°	-0.5	-.866	0.75	.866	0.5	0.25

yes, it seems to work, let's try another angle

15°	.259	0.5	.966

$2 \times 0.259 \times 0.966 = 0.500388$ seems to be w/in rounding error

25°	.423	0.766	.906

$2 \times 0.423 \times 0.906 = 0.766476$ once again w/in rounding error

justification: sin and cos are both periodic functions with values between -1 and 1. If I multiply them together I'll get a new number between -1 and 1. They are out of phase, so it makes sense multiplying by 2 would be needed to get the full range.

Notes: There are four proper double angle formulas, and many other patterns students could find. Give credit for any pattern of reasonable complexity.
Formal proof is beyond the scope of the course, so any argument making sense of the [illegible] is worthy of level 7-8